CLAIMS

1. An isolated nucleic acid molecule that has promoter activity specific to the endosperm and that comprises a DNA sequence selected from the group consisting of :

a) a sequence as depicted in any one of SEQ ID No: 1 to 3, or SEQ ID No: 62;

b) a fragment of a sequence as defined in (a), wherein said sequence has promoter activity specific to the endosperm;

c) a sequence that has at least 70 % sequence identity with a sequence as defined in (a), wherein said sequence has promoter activity specific to the endosperm;

d) a sequence hybridizing with the complementary strand of a sequence as defined in (a) and/or (b) under stringent conditions, wherein said sequence has promoter activity specific to the endosperm; and

e) a sequence that comprises a nucleotide sequence which is conserved among at least two of SEQ ID No: 1 to 3 or SEQ ID No: 62.

2. The isolated nucleic acid molecule according to Claim 1, which has a maternal parent-of-origin pattern of expression.

3. The isolated nucleic acid molecule according to Claim 1 or 2, which has been isolated from a plant selected from the group consisting of maize, teosintes, rice, sorghum, wheat, barley, rye, pea, and sugar cane.

4. An expression cassette comprising a nucleic acid molecule having promoter activity specific to the endosperm according to any one of the preceding claims, operatively linked to at least one gene of interest.

5. The expression cassette according to Claim 4, wherein said gene of interest is selected from the group consisting of a sequence that encodes a peptide or a protein, an antisense RNA sequence, a sense RNA sequence and a ribozyme.

6. The expression cassette according to any one of Claims 4 to 5, in which the gene of interest encodes a protein selected from the group consisting of a protein involved in development of the embryo and/or of the endosperm, in determination of seed size and/or quality, in cell growth, or in sugar or fatty acid metabolism, in nutrient transfer, of a toxic protein, a transcription inhibiting protein, and a protein improving resistance to pathogens.

7. The expression cassette according to any one of Claims 4 to 6, which further comprises a selection marker gene for plants.

8. The expression cassette according to any one of Claims 4 to 7, which further comprises a gene encoding a MRP1 protein.

9. An expression vector containing at least an expression cassette according to any one of Claims 4 to 8.

10. A host cell containing at least a vector according to Claim 9.

11. A transgenic plant, or a part of a transgenic plant comprising a cell according to Claim 10.

12. The plant or part of a plant according to Claim 11, wherein said plant or part of plant is a cereal or oily plant.

13. The plant or part of a plant according to Claim 12, which is from the group consisting of maize, rice, wheat, barley, rape, and sunflower.

14. A hybrid transgenic plant obtained by crossing plants as defined in either one of Claims 11 or 12.

15. A method of obtaining a plant having improved agronomic qualities and/or improved resistance to a pathogen, comprising the steps consisting of :

a) transforming at least one plant cell by means of at least a vector according to Claim 9;

b) cultivating the cell(s) thus transformed so as to generate a plant containing in its genome at least an expression cassette according to any one of Claims 4 to 8, whereby a plant having improved agronomic qualities and/or improved resistance to a pathogen is obtained.

16. Use of at least an expression cassette as defined in any one of Claims 4 to 8, for obtaining a transgenic plant exhibiting improved agronomic qualities and/or improved resistance to pathogen.

17. An isolated nucleic acid molecule encoding a plant basal endosperm transfer cell layer (BETL) protein that comprises a sequence selected from the group consisting of :

a) a nucleotide sequence encoding a protein consisting of an amino acid sequence as depicted in any of SEQ ID No: 6, 8, 10, 53, 12, 14 and 16, and variants thereof;

b) a nucleotide sequence as depicted in any of SEQ ID No: 5, 7, 9, 11, 13, 15 and 58;

c) a sequence hybridizing under stringent conditions with the complementary strand of a nucleic acid molecule as defined in (a) or (b);

d) a sequence encoding a fragment of a protein encoded by a sequence as defined in any one of (a) to (c).

18. The isolated nucleic acid molecule according to Claim 17, which has been isolated from a plant selected from the group consisting of maize, teosintes, rice, wheat, barley, rye, pea, sorghum, and sugar cane.

19. An expression cassette comprising a nucleic acid molecule according to any one of claims 17 to 18 operatively linked to regulatory elements allowing the expression in prokaryotic and/or eukaryotic host cells.

20. The expression cassette according to Claim 19 which further comprises a selection marker gene for plants.

21. An expression vector containing at least an expression cassette according to any one of Claims 19 to 20.

22. A host cell containing at least a vector according to Claim 21.

23. A transgenic plant, or a part of a transgenic plant, comprising stably integrated into its genome a nucleic acid molecule of any one of Claims 17 to 18, operatively linked to regulatory elements allowing transcription and/or expression of the nucleic acid molecule in plant cells.

24. The plant or part of a plant according to Claim 23, wherein said plant or part of plant is a cereal or oily plant.

25. The plant or part of a plant according to Claim 24, wherein said plant is selected from the group consisting of maize, rice, wheat, barley, rape, and sunflower.

26. A plant basal endosperm transfer cell layer (BETL) protein or biologically active fragment thereof encoded by a nucleic acid molecule of any one of Claims 17 to 18.

27. A plant basal endosperm transfer cell layer (BETL) protein that comprises the amino acid sequence shown in SEQ ID N°54.

28. A method for improving plant pathogen resistance, comprising the steps consisting of :

c) transforming at least a plant cell by means of at least a vector according to Claim 21;

d) cultivating the cell(s) thus transformed so as to generate a plant containing in its genome at least an expression cassette according to any one of Claims 19 to 20, whereby a plant with improved pathogen resistance is obtained.

29. A method for improving the agronomic quality of a plant, comprising the steps consisting of :

a) transforming at least a plant cell by means of at least a vector according to Claim 21;

b) cultivating the cell(s) thus transformed so as to generate a plant containing in its genom e at least an expression cassette according to any one of Claims 19 to 20, whereby a plant with improved agronomic quality is obtained.

30. A method of claim 29, wherein said plant exhibits an increased seed size.